

[Translation]

RESPONSE

TO: SHINICHI KAWAGUCHI, ESQ., Examiner
Japanese Patent Office

1. INTERNATIONAL APPLICATION NUMBER:

PCT/JP2005/006096

2. APPLICANT:

NAME: INTELLECTUAL PROPERTY BANK CORP.

ADDRESS: 21-19, Toranomon 1-chome, Minato-ku,
Tokyo, 105-0001 Japan

NATIONALITY: Japan

ADDRESS: Japan

3. AGENT

NAME: (8127) Yoshiharu Yoshida, Patent Attorney

ADDRESS: Shuwa No.2 Toranomon Building 6F, 21-19, Toranomon 1-chome,
Minato-ku, Tokyo, 105-0001 Japan

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5. CONTENTS OF RESPONSE

(1) Background to Response

The second Written Opinion states that the invention set forth in Claims 1 to 6 has no novelty and the invention of Claims 1-8 has no inventive in support of the cited references 1 and 2.

Hereinafter, Applicant would respectfully discuss on the Opinion noted above.

List of cited references

Reference 1: Japanese Utility Model Application No. 54-174404 (Japanese
U.M. Appln. Pub. No. 56-92757A)

Reference 2: JP 54-17442 A

(2) Contents and basis of amendments

Claims 1-3 are canceled.

Claim 4 is amended from "a wind turbine blade featured by comprising a wind receiving plate having a wind receiving surface and an openable and closable pivot, said wind receiving plate being disposed in an cutout made partially in the wing-shaped surface of a blade as a substitute for the wing portion thus cut out, and an actuator placed in said cutout to open and close said wind receiving plate" to "a wind turbine blade featured by comprising a wind receiving plate having a wind receiving surface and an openable and closable pivot, said wind receiving plate being disposed in an cutout made partially in the wing-shaped surface of a blade as a substitute for the wing portion thus cut out, and an actuator placed in said cutout to open and close said wind receiving plate."

Claim 5 is amended from "a vertical axis wind turbine featured by comprising a wind receiving plate disposed in an cutout made partially in the wing-shaped surface of a blade as a substitute for the wing portion thus cut out, an actuator placed in said cutout to open and close said wind receiving plate, and a control means for controlling the opening and closing operation of said wind receiving plate through said actuator" to "a vertical axis wind turbine featured by comprising a wind receiving plate disposed in an cutout made partially in the wing-shaped surface of a blade as a substitute for the wing portion thus cut out, an actuator placed in said cutout to open and close said wind receiving plate, and a control means for controlling the opening and closing operation of said wind receiving plate through said actuator."

The amendments to Claims 4 and 5 are supported by the disclosures in Paragraphs [0051], [0054], [0067] to [0069], and FIGS. 6 to 8.

The amendments on Pages 5 and 6 are made in conformity to the amendments to Claims.

(3) Characteristic feature of the invention

The wind turbine blade set forth in Claim 4 is featured by comprising a wind receiving plate having a wind receiving surface and an openable and closable pivot, which wind receiving plate is disposed in an cutout made partially in the wing-shaped surface of a blade as a substitute for the wing portion thus cut out, and an actuator placed in the cutout to open and close the wind receiving plate.

The vertical axis wind turbine set forth in Claim 5 is featured by comprising a wind receiving plate disposed in an cutout made partially in the wing-shaped surface of a blade as a substitute for the wing portion thus cut out, an actuator placed in the cutout to open and close the wind receiving

plate, and a control means for controlling the opening and closing operation of the wind receiving plate through the actuator.

Therefore, since the actuator is disposed in the space formed by partially cutting off the wing-shaped surface of the blade, the output performance and starting performance of the wind turbine can be improved without being influenced by the wind flowing along the surface of the blade.

(4) Comparison with Cited References

Reference 1 describes "a vertical wind turbine having auxiliary wings on blades."

Reference 2 describes "a vertical axis wind turbine having control wings."

However, in Reference 1, there is a mere description of "the auxiliary wings disposed on the blade" (Page 3), and Reference 2 discloses merely "the revolution of the turbine is controlled with starting torque and retarding torque, which are obtained by manually or automatically operating the control wings 14 (by using a known hydraulic device) when starting the turbine or in strong winds such as typhoon" (lower right column on page 2). However, the distinctive structure of the present invention, which is featured by "comprising the wind receiving plate disposed in the cutout made partially in the wing-shaped surface of the blade as a substitute for the wing portion thus cut out, the actuator for opening and closing the wind receiving plate, and the control means for controlling the opening and closing operation of the wind receiving plate through the actuator", is neither taught nor suggested in the cited references.

That is, the invention mentioned in Reference 1 is not relevant to a mechanism of opening and closing the auxiliary wings by using the actuator. The control blade 14 mentioned in Reference 2 is not attached to the blade, but it is used as an independent wing separate from the main wing, thus to have large degree of freedom in setting a means for automatically operating a hydraulic actuator, resulting in an adverse effect on overall performance due to a change in wind current caused by the presence of the control blade 14 other than the main wing. On the contrary, the present invention is featured by the wind receiving plate, which is formed as a part of the surface of the blade (main wing) and disposed in the space formed by partially cutting off the wing-shaped surface of the blade, so that such an adverse effect on overall performance can be averted, which is caused by the change in wind current as seen in Reference 2. Furthermore, the present invention can fulfill simultaneous pursuit of the intrinsic service power performance and

the starting performance of the wind turbine by the characteristic blade with the wind receiving plate, which functions as the main wing-type blade in a normal operation and opens the wind receiving plate when starting the wind turbine.

Hence, the wind turbine blade mentioned in Claim 4 of the present invention and the vertical axis wind turbine mentioned in Claim 5 are distinct in structure from those disclosed in the cited References 1 and 2. The distinction in structure brings about a distinction in effect of the present invention. Thus, the present invention can in no way be easily accomplished from the cited References 1 and 2.

Therefore, it is believed that the wind turbine blade mentioned in Claim 4 and the vertical axis wind turbine mentioned in Claim 5 are novel and involve an inventive step over all of the cited references.

Since Claims 6-8 of the present invention are dependent on Claim 5, it is also believed to be novel and involve an inventive step over the cited References 1 and 2.

6. CONCLUSION

For the reasons indicated above, Applicant respectfully requests a reexamination and wishes to get a decision to issue allowance of this application containing Claims 4-8.